

Pulsed Green Laser for Time Resolved Raman Spectroscopy, Phase I

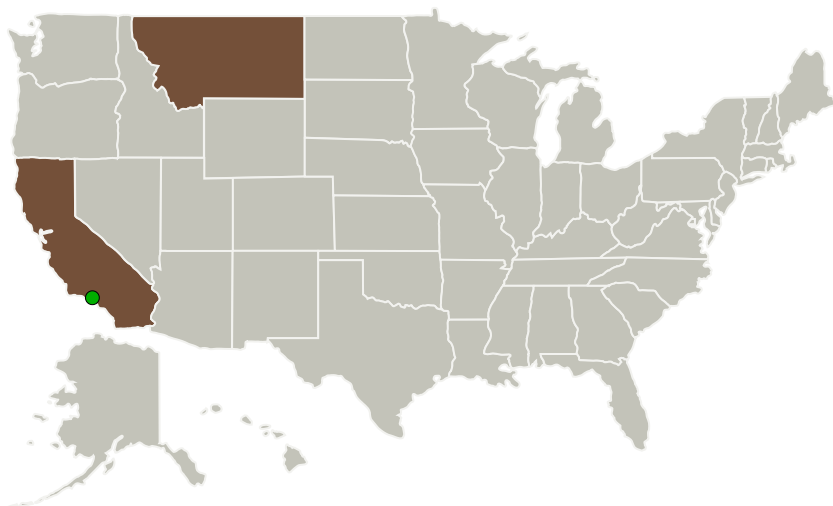


Completed Technology Project (2014 - 2014)

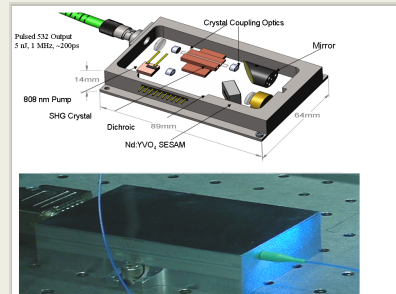
Project Introduction

This SBIR Phase I effort will demonstrate the feasibility of developing a fully packaged, efficient, short pulse, high repetition rate frequency doubled micro-chip laser for use in NASA-JPL's Time Resolved Raman Spectrometer (TRRS) to analyze elemental and mineral compositions in remote planetary environments. Time Resolved Raman Spectroscopy can identify mineral content in natural geological context with enhanced discrimination from impurity-based interfering fluorescence making it a leading candidate for in situ exploration of planetary bodies. The combination of a high repetition rate, short pulse width laser with commercially available single photon avalanche detector (SPAD) arrays will enable the development of a robust, compact, electrically efficient TRRS instrument that is well suited for space-based use.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
ADVR, Inc.	Lead Organization	Industry	Bozeman, Montana
● Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California



Pulsed Green Laser for Time Resolved Raman Spectroscopy Project Image

Table of Contents

Project Introduction	1
Primary U.S. Work Locations and Key Partners	1
Project Transitions	2
Images	2
Organizational Responsibility	2
Project Management	2
Technology Maturity (TRL)	2
Technology Areas	3
Target Destinations	3

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Primary U.S. Work Locations

California

Montana

Project Transitions

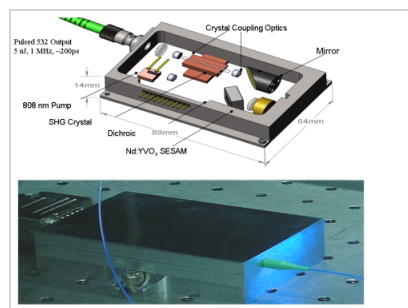
June 2014: Project Start

December 2014: Closed out

Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/137719>)

Images



Project Image

Pulsed Green Laser for Time Resolved Raman Spectroscopy
Project Image

(<https://techport.nasa.gov/image/126826>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

ADVR, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

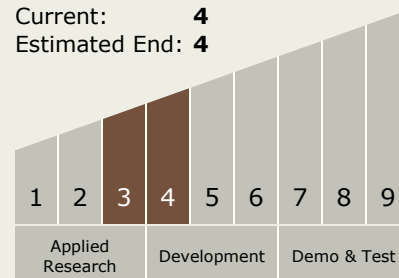
Carlos Torrez

Principal Investigator:

Elizabeth J Heckel

Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**



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Technology Areas

Primary:

- TX08 Sensors and Instruments
 - └ TX08.1 Remote Sensing Instruments/Sensors
 - └ TX08.1.5 Lasers

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System